

1)

	Virtual Address	Physical Address	Memory Region	Sub Region
a)	0x80000020	00000020	KSEG0	RAM
b)	0xA0000020	00000020	KSEG1	RAM
c)	0xBF800001	1F800001	KSEG1	SFR
d)	0x9FC00111	1FC00111	KSEG0	boot
e)	0x9D001000	1D001000	KSEG0	flash

2) _RESET_ADDR = 0xBD001970

3)

a)	PORTB	31/15 - 16/0
	PORTC	31/15 - 28/12; 20/4 - 17/1
	PORTD	31/15 - 16/0
	PORTE	25/9 - 16/0
	PORTF	29/13 - 28/12; 24/8; 21/5 - 16/0
	PORTG	31/15 - 28/12; 25/9 - 22/6; 19/2 - 16/0

Pin 60

b)	31/15 – 29/13	unimplemented
	28/12 –	MVEC
	27/11 –	unimplemented
	26/10 – 24/8	TPC
	23/7 – 21/5	unimplemented
	20/4 – 16/0	INT#EP

4) 9 LATFbits.LATF1 = 0; // on the NU32, so "high" (1) = "off" and "low" (0) = "on"

5) n/a

6)

a)	BF805000	1000
b)	BF886080	F000

7) Because it is including libraries and functions referenced in the program.

```

8)  a)  512  and  a0,a0,0
      513  and  a1,a1,0
      514  la   t0,_main_entry
      515  jr   t0
      516  nop
      517
      518  .end _startup

      b)  bf88cb3c A  C2FIFOUA31INV
          bf88cb40 A  C2FIFOCI31
          bf88cb44 A  C2FIFOCI31CLR
          bf88cb48 A  C2FIFOCI31SET
          bf88cb4c A  C2FIFOCI31INV

      c)  struct {
          uint32_t SPIRBF:1;
          uint32_t SPITBF:1;
          uint32_t :1;
          uint32_t SPITBE:1;
          uint32_t :1;
          uint32_t SPIRBE:1;
          uint32_t SPIROV:1;
          uint32_t SRMT:1;
          uint32_t SPITUR:1;
          uint32_t :2;
          uint32_t SPIBUSY:1;
          uint32_t :4;
          uint32_t TXBUFELM:5;
          uint32_t :3;
          uint32_t RXBUFELM:5;
      };

```

The sizes line up with Table 14-4: SPI2, SPI3, and SPI4 Register Map

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Chapter 4; 1, 2, 4

- 1) global functions: NU32_Startup
 NU32_ReadUART3
 NU32_WriteUART3

 private constant: NU32_DESIRED_BAUD
- 2) a) see code

 b) main.c only contains int main()
 helper.h contains prototypes and structure definitions
 helper.c contains the functions of helper.h

 c) main.c include both calculate.h and io.h
 calculate.c includes calculate.h
 io.c includes both calculate.h and io.h because the struct is defined with calculate.h
- 4) see code